PATENT CLAIMS

1. A method for conditioning at least a subregion of a cooling process region, in which during a cooling process at least one shaped body which is shaped in a shaping process, preferably from a melt, in particular made from glass or steel, is cooled according to a predetermined or predeterminable temperature profile, with thermally induced mechanical stresses being kept at a low level in the shaped body, comprising the following method steps:

a) passing at least one conditioning gas over at least one surface, which can be corroded in the presence of water, of the shaped body at least during part of the cooling process,

b) setting the absolute water content in the conditioning gas to a range of up to at most a predetermined or predeterminable limit value, which is preferably matched to a maximum tolerable increase in the degree of corrosion of the shaped body during the cooling process, at least when the conditioning gas enters the cooling process region and/or when the conditioning gas strikes the surface of the shaped body.

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2. The method as claimed in claim 1, in which the cooling process region comprises a cooling furnace and/or a cooling section and the conditioning gas is fed to the shaped body at least in a subregion of the cooling furnace and/or cooling section.

3. The method as claimed in claim 1 or claim 2, in which the conditioning gas is passed through a region within the cooling process region which is selected from a near surface region of the shaped body, on the one hand, through to the entire cooling process region, on the other hand.

4. The method as claimed in one of claims 1 to 3, in which the conditioning gas used is air or a gas with a composition which at least approximately corresponds to the composition of air.

5. The method as claimed in claim 4, in which the conditioning gas used is ambient air from an environment outside the cooling process region and/or from an outside environment outside a building surrounding the cooling process region, the ambient air preferably being sucked in and then filtered.

6. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is also used for a combustion process for burning, in particular oxidizing, fuel for heating the raw materials in the melting process, in particular is fed to burners for burning the fuel.

7. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is passed over a surface of the melt.

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8. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is passed over at least one surface of the shaped body (bodies) at least during part of the shaping process.

9. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is passed over at least one surface of the shaped body (bodies) at least during part of a storage process and/or transport process, in particular following the cooling process, for storing or transporting the shaped body.

10. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is passed over at least one surface of the shaped body (bodies) at least during part of a further processing process and/or treatment process, in particular following the cooling process or the storage process or the transport process, for further processing and/or treating the shaped body, in particular a coating or finishing process for coating or finishing the shaped body and/or a process for producing a laminated body using at least one shaped body.

11. The method as claimed in one or more of the preceding claims, in which dry conditioning gas is passed over or through the raw material(s) prior to the melting process.

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12. The method as claimed in one or more of the preceding claims, in which

a) the limit value for the absolute water content in the conditioning gas is approximately 0.006 or 6 g of water in 1 kg of conditioning dry gas,

and/or

b) in which the relative moisture content of water in the conditioning gas is kept in a range up to at most 30% at a temperature of 25°C, up to at most 20% at a temperature of 32°C and/or at most 10% at a temperature of 45°C.

13. The method as claimed in one or more of the preceding claims, in which

a) the absolute water content of the conditioning gas is set by condensing water out of the conditioning gas,

b) the conditioning gas, in order for the water to be condensed out, is cooled by means of at least one refrigeration machine, in particular releases heat for the evaporation of refrigerant at an evaporator of the refrigeration machine.

14. The method as claimed in claim 13, in which the conditioning gas is cooled by means of at least one absorption refrigeration machine.

15. The method as claimed in claim 13 or claim 14, in which the conditioning gas is cooled by means of at least one compression refrigeration machine.

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16. The method as claimed in one or more of claims 13 to 15, in which the conditioning gas is reheated after the cooling and condensing out of the water in order to set the relative moisture content.

17. The method as claimed in one or more of the preceding claims, in which

a) the conditioning gas is dried by the uptake of water vapor at an absorbing, adsorbing or hygroscopic material, e.g. silica, and

b) the absorbing, adsorbing or hygroscopic material is regenerated, in particular at regular intervals or continuously, by forcing out or desorbing the water.

18. The method as claimed in one of claims 13 to 17, in which the conditioning gas is dried, successively or simultaneously, by a combination of two or more of the following forms of drying

a) condensing out water by cooling by means of an absorption refrigeration machine,

b) condensing out water by cooling by means of a compression refrigeration machine, and

c) water being taken up at or in an absorbing, adsorbing or hygroscopic material.

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19. The method as claimed in one or more of the preceding claims, in which the mean flow velocity of the or each conditioning gas flow is set between approximately 5 m/s and approximately 20 m/s.

20. The method as claimed in one or more of the preceding claims, in which the conditioning gas flow is substantially steady (time independent).

21. The method as claimed in one or more of the preceding claims, in which the purity of the conditioning gas is set, in particular by filtering, as a further conditioning variable.

22. The method as claimed in one or more of the preceding claims, in which the composition of the conditioning gas is set as a further conditioning variable, and in particular a higher proportion of inert gas, in particular carbon dioxide, nitrogen or a noble gas, for example argon, is set.

23. The method as claimed in one or more of the preceding claims, in which the temperature of the conditioning gas is controlled as a further conditioning variable, in particular to a temperature range between 5°C and a process temperature in the process region.

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24. The method as claimed in one or more of the preceding claims, in which the conditioning gas is used only once in the process and after use in the process is discharged to a surrounding environment.

25. The method as claimed in one or more of the preceding claims, in which the conditioning gas is passed in a circuit and is dried each time it passes through the circuit after use in the process.

26. The method as claimed in one or more of the preceding claims, in which at least one process region is conditioned substantially continuously.

27. The method as claimed in one or more of the preceding claims, in which at least one process region is conditioned substantially discontinuously.

28. The method as claimed in one or more of the preceding claims, in which one or more shaped bodies, in particular for transport, are sealed or enclosed in gastight manner in a container or sheath, and a dry or dried gas atmosphere is set in the container or the sheath, or the absolute or relative water content in the gas atmosphere is kept or set below a or the abovementioned predetermined limit value.

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29. A method for producing shaped bodies, in which

a) in a melting process, at least one raw material is converted into the melt,

b) at least one shaped body is shaped from the melt in a shaping process,

c) the or each shaped body is cooled in at least one cooling process region,

d) the cooling process region, at least in a subregion, is conditioned by the method as claimed in one or more of claims 1 to 28.

30. The method as claimed in claim 29 for producing shaped bodies from glass, in which glass raw materials are converted into a glass melt.

31. The method as claimed in claim 30, in which the glass melt is applied to a liquid carrier medium, in particular liquid metal, preferably tin, and a flat shaped body is formed in the form of a layer or a ribbon of glass on the surface of the liquid carrier medium.

32. The method as claimed in claim 31, in which the flat shaped body is transported off the carrier medium and fed to the cooling process or the cooling installation.

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33. The method as claimed in claim 29, in which during the melting process steel raw materials are converted into a steel melt and shaped bodies made from steel are produced.

34. The method as claimed in one or more of claims 29 to 33, in which a continuous shaped body is produced or the shaped body is produced continuously from the melt and the shaped body is divided into individual shaped bodies following the cooling process.

35. An apparatus for conditioning at least a subregion of a cooling process region in which during a cooling process at least one shaped body which has been shaped in a shaping process, preferably from a melt, is cooled in accordance with a predetermined or predeterminable temperature profile, with thermally induced mechanical stresses being kept at a low level in the shaped body, in particular for carrying out the method as claimed in one or more of claims 1 to 34, comprising

a) at least one drying device for drying at least one conditioning gas, in such a manner that the absolute moisture loading of the conditioning gas equates to at most a predetermined or predeterminable limit value, which is preferably matched to a maximum tolerable increase in the degree of corrosion of the shaped body during the cooling process and is preferably 0.006,

b) and also at least one conditioning device for passing dried conditioning gas from the at least one drying device to the cooling process region.

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36. The apparatus as claimed in claim 35, in which at least one conditioning device passes dried conditioning gas over at least one surface, in particular a surface which can be corroded in the presence of water, of the shaped body (bodies).

37. The apparatus as claimed in claim 35 or claim 36, in which the conditioning gas comprises air or a conditioned gas with a composition which at least approximately corresponds to the composition of air.

38. The apparatus as claimed in claim 37, in which at least one conditioning device, as conditioning gas, sucks in ambient air from an environment outside each melting furnace, each shaping device and each cooling device and if appropriate each store, preferably filters this air after it has sucked it in, and then feeds it to the at least one drying device.

39. The apparatus as claimed in one or more of claims 35 to 38, in which at least one drying device is a condensation drying device and comprises at least one refrigeration machine for cooling conditioning gas and condensing water out of the conditioning gas, with in particular at least one evaporator of the refrigeration machine exchanging heat with the conditioning gas and the conditioning gas releasing heat for evaporating refrigerant of the refrigeration machine.

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40. The apparatus as claimed in claim 39, in which at least one drying device comprises at least one absorption refrigeration machine for cooling conditioning gas.

41. The apparatus as claimed in claim 38 or claim 39, in which at least one drying device comprising at least one compression refrigeration machine for cooling conditioning gas.

42. The apparatus as claimed in one or more of claims 35 to 41, in which

a) at least one drying device comprises absorbing or hygroscopic material, e.g. silica, in particular arranged on a rotor, for absorbing or taking up water vapor from the conditioning gas, and

b) also comprises a regeneration device for regenerating the absorbing or hygroscopic material or driving out or desorbing the water.

43. The apparatus as claimed in one or more of claims 35 to 42, having a heating device for heating the conditioning gas after the cooling and condensing-out of the water.

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44. The apparatus as claimed in one or more of claims 35 to 43, in which at least one conditioning device comprises

a) feed means for feeding conditioning gas, and

b) at least one exit opening, which is arranged or opens out in the cooling process region, as an exit for the conditioning gas,

c) wherein the feed means are or can be flow connected to the at least one exit opening.

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